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КОНТАКТНО-ТОЧЕЧНАЯ СВАРКА СО СПЕЦИАЛЬНОЙ  
ПОДГОТОВКОЙ СВАРИВАЕМЫХ КРОМОК

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Resistance spot welding is widely used in modern industry. The reason for it is its high labor efficiency, low power consumption, absence of filler materials and shielding atmospheres and good hygienic conditions of work and relatively easy robotization of the process.

This welding method can be applied only to overlap joints at a comparatively big width of the overlap, which equals from 7 to 12 thicknesses of the billets to be welded. The type of welding under consideration is usually used for joining of parts up to 6 mm thick, and sometimes up to 10 mm thick. Increase in thicknesses will provoke serious difficulties concerning substantial current bridging and reduction of service life of electrodes. Moreover, it can lead to the detrimental effect of bending moment on performance of welded joints. Increase in thicknesses of the parts welded causes increase in capacity of the equipment used for resistance spot welding.

Increase in performance characteristics of spot welded joints, including their static and cyclic strength, can be achieved with an interlayer of glue introduced in the lap area between the parts welded. However, the approach will not be so efficient if thickness of the parts welded increases.

Special edge preparation in the form of bevels should be used over the entire overlap area to partially eliminate the detrimental effects related to increase in thickness of the parts welded by the resistance spot welding process. Sizes of the joint were taken from the recommendations of study for the 5 + 5 mm thickness.

Geometry of the proposed joint was chosen so that clearances between the electrode tips in both variants were similar and equal to 10 mm.

Examination of macrostructure showed that the cast nugget extends along the contact plane of the billets, and the welded joint is free from any defects caused by the presence of bevels in the parts welded.

It should be noted in conclusion that edge preparation in the form of bevels ensuring an inclined position of the mating planes reduces the equipment power consumption in formation of a weld spot, harmful influence of bending on the load-carrying capacity of the welded joint in resistance spot welding, and degree of non-uniformity of distribution of the shear and tear forces across the cast nugget section.